

Name: _____

Date: _____

Per.: _____

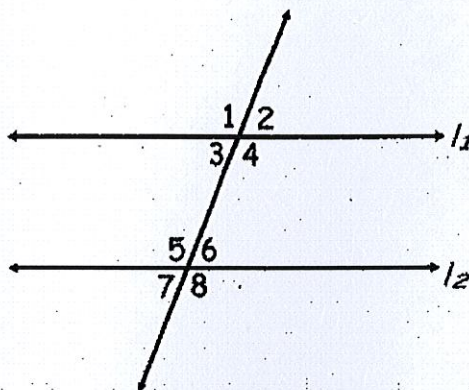
2.12 – Proofs with Parallel Lines

Corresponding Angles POSTULATE:

Theorem to prove: Alternate Interior Angles Theorem

Given: $l_1 \parallel l_2$

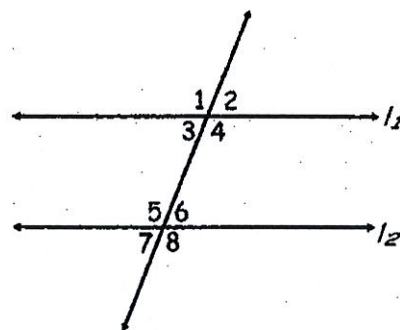
Prove: $\angle 3 \cong \angle 6$



Statements	Reasons
1. $l_1 \parallel l_2$	1. Given
2. $\angle 2 \cong \angle 6$	2. corresponding angles postulate
3. $\angle 2 \cong \angle 3$	3. vertical angles theorem
4. $\angle 3 \cong \angle 6$	4. transitive prop.

Theorem to prove: Alternate Exterior Angles Theorem

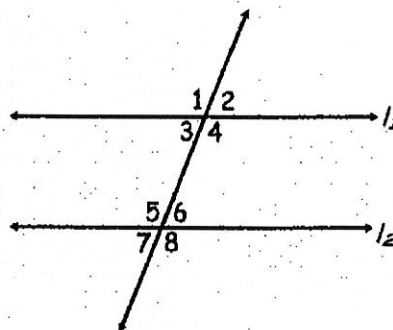
Given: $l_1 \parallel l_2$
Prove: $\angle 1 \cong \angle 8$



Statements	Reasons
1. $l_1 \parallel l_2$	1. Given
2. $\angle 4 \cong \angle 8$	2. Corresponding angles postulate
3. $\angle 1 \cong \angle 4$	3. vertical angles theorem
4. $\angle 1 \cong \angle 8$	4. transitive prop.

Theorem to prove: Alternate Exterior Angles Theorem (method #2)

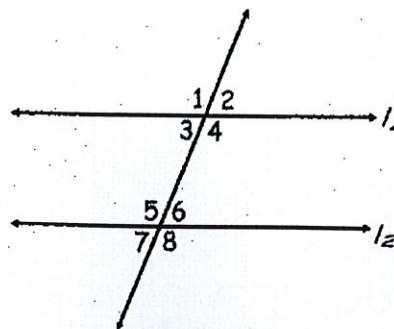
Given: $l_1 \parallel l_2$
Prove: $\angle 1 \cong \angle 8$



Theorem to prove: Same Side Interior Angles Theorem

Given: $l_1 \parallel l_2$

Prove: $\angle 4$ is supplementary
to $\angle 6$

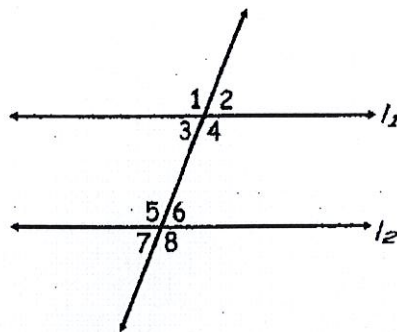


Statements	Reasons
1. $l_1 \parallel l_2$	1. Given
2. $\angle 4 \cong \angle 8$	2. corresponding angles postulate
3. $m\angle 4 = m\angle 8$	3. def. of \cong angles
4. $m\angle 6 + m\angle 8 = 180^\circ$	4. def. of supplementary
(* you could establish $\angle 6$ and $\angle 8$ as a linear pair first *)	
5. $m\angle 6 + m\angle 4 = 180^\circ$	5. substitution prop.
6. $\angle 4$ is supplementary to $\angle 6$	6. def. of supplementary

WLPCS
Geometry

Theorem to prove: Same Side Exterior Angles Theorem

Given: $l_1 \parallel l_2$
Prove: $\angle 1$ is supplementary
to $\angle 7$



Statements	Reasons
1. $l_1 \parallel l_2$	1. Given
2. $\angle 1 \cong \angle 5$	2. corresponding angles postulate
3. $m\angle 1 = m\angle 5$	3. def. of \cong angles
4. $m\angle 5 + m\angle 7 = 180^\circ$	4. def. of supplementary
5. $m\angle 1 + m\angle 7 = 180^\circ$	5. substitution prop.
6. $\angle 1$ is supplementary to $\angle 7$	6. def. of supplementary